rent involves the solution during a difficult manufacture of two simultaneous equations, and the percentage of lamps correctly solving them is small. It is the unavoidable outfalls which play such havoc with his balance-sheet, so that it is small wonder if the lamp-maker is tempted to be a trifle lax in his rating. If cooperation existed and station engineers would see the sweet reasonableness of adjusting their supply voltages in different districts or different towns, so as to afford a market for all the lamps a manufacturer produces, it would be possible for him to turn out a better article at a lower price with undeniable advantage to the industry generally.

The information concerning the new lamps is much more mèagre and conjectural. It would seem that the osmium lamp is already moribund or dead, and that we have only to reckon with the tantalum and tungsten filament lamps, the former taking 2 to 2·5 watts and the latter 1 to 1·2 watts per candle. The tungsten lamp appears to have a brilliant future before it. A lamp working at a little more than 1 watt per candle brings electric lighting almost to the level of gas for cheapness. The light units, though at present large (30 candles and upwards), are no larger than the gas mantle units, and so it may reasonably be supposed that the public will not object to them, though they undoubtedly do away with one of the benefits of electric light. The chief drawback in England is the low voltage, the lamps being at present only suitable for voltages of about 100. It is conceivable, should lamp-makers fail in producing a high-voltage tungsten filament lamp, that engineers will change back to low voltage, in spite of the eagerness with which they struggled to enforce the change to high voltage a few years ago. The competition of gas is excessively severe, and in some way must be met; at present the tungsten lamp offers the only means of meeting it in interior lighting.

The next few years promise to be of exceptional interest so far as the development of electric lighting is concerned; a radical improvement has long been wanting, and there seems every reason to believe that it has at last been made. The present condition of affairs is full of possibilities, and no one can say what the position will be a few years hence. Perhaps to his interesting account of the birth of the carbon filament lamp M. Rodet may be able to add in his next edition the melancholy tale of its death.

MAURICE SOLOMON.

DR. MAXWELL T. MASTERS, F.R.S.

THE botanical and horticultural world has sustained a severe loss by the death on May 30 of Dr. Maxwell T. Masters, the well-known editor of the *Gardener's Chronicle*, and the author of many botanical works.

Dr. Masters was born in 1833, and was educated at King's College, subsequently removing to Oxford, where he became sub-curator of the Fielding Herbarium under Dr. Daubeny. He was botanical lecturer at St. George's Hospital from 1855 to 1868, and was elected to the fellowship of the Royal Society in 1870. He was a corresponding member of the Institute of France, and was also an officer of the Order of Leopold. He achieved distinction in his earlier days by the publication of his "Vegetable Teratology," a most valuable work, which has been translated into several European languages. But his most definite contributions to botany in later years were those dealing with the Coniferæ, a difficult group which had long interested him, and in which he displayed a remarkable and detailed knowledge. He contributed many papers on the structure and taxonomy of the species to the publications of the Linnean and Horticultural Societies.

But it is especially in matters appertaining to horticulture that he will be best known to most people. His position as editor of the *Gardener's Chronicle* gave him considerable influence, and he always used his best efforts with single-hearted devotion to promote the welfare of horticulture and to look after the interests of those who were engaged in gardening as the practical business of their lives.

He always took the keenest interest in the Royal Horticultural Society, and for many years presided over the Scientific Committee.

He will be sorely missed by a large circle of friends, as well as by many others in the gardening world, to whom his name has become almost a household word.

NOTES.

AT the meeting of the council of the British Association on Friday last, June 7, Mr. Francis Darwin, F.R.S., was unanimously nominated to the office of president for the year 1908–9.

WE have to deplore the deaths at Cambridge, on Friday last, June 7, of Prof. Alfred Newton, F.R.S., professor of zoology and comparative anatomy in the University, and Dr. E. J. Routh F.R.S.

THE ladies' soirée of the Royal Society will be held at Burlington House on Wednesday next, June 19.

SIR WILLIAM PERKIN, F.R.S., has been elected president of the Faraday Society for the session 1907–8.

TWELVE tablets were unveiled in the Hall of Fame of New York University on Memorial Day, May 30, among them being one in memory of Maria Mitchell, the astronomer, and another in memory of Louis Agassiz.

DR. NANSEN, president of the Social and Political Education League, will deliver his presidential address, on "Science and Ethical Ideas," at University College, Gower Street, on June 26. Sir Oliver Lodge will preside.

REUTER reports that a typhoon occurred in the Caroline Islands in the latter part of March and devastated the Olcai group of those islands. A great wave swept the land and buried it under a layer of sand.

WE learn from *Science* that Dr. C. R. Wieland, of the Peabody Museum, Yale University, has left America for a stay of five months in Europe, where he will visit the plant collections of northern and southern Europe for a special study of cycads. The results of his investigations will be published in his second volume on cycads.

A MEETING of the International Council for the Exploration of the Sea is being held in London during the present week. In the absence through illness of the president of the council, Dr. W. Herwig, his place is being taken by the vice-president, Dr. Otto Pettersson, of Stockholm. Among the members of the council and experts now present in London are Dr. P. P. C. Hoek, general secretary, and his assistant, Dr. H. M. Kyle; Dr. Lewald, Prof. Krümmel, Prof. Brandt, Prof. Heincke, Dr. Henking, and Dr. Ehrenbaum, from Germany; Mr. A. Hamman and Prof. Gilson (Belgium); Captain Drechsel, Mr. Martin Knudsen, and Dr. C. G. J. Petersen (Denmark); Dr. Homen and Mr. J. A. Sandman (Finland); Prof. Nansen, Dr. Hjort, and Dr. Helland Hansen (Norway); Prof. Max Weber, Dr. Redeke, and Dr. Wind (Holland); Prof. Otto Pettersson, Dr. F. Trybom, and Mr. G. Ekman (Sweden); Mr. Walter Archer, Prof. D'Arcy Thompson, Dr. Mill, Dr. Garstang, Dr. Masterman, Dr. H. Reid, Mr. E. W. L. Holt, Dr. Wemyss Fulton, Dr. E. J. Allen, and Mr. D. J. Matthews (Great Britain). His Majesty the King will receive the delegates at Buckingham Palace on Friday afternoon. The first formal meeting of the council takes place to-day, June 13, at the Foreign Office, when Sir Edward Grey will open the proceedings. The members of the council are being entertained at dinner during the week by Lord Carrington, the Lord Mayor, the Secretary for Scotland, the Fishmongers' Company, and the Royal Geographical Society, whilst the chairman of the council of the Marine Biological Association will give a luncheon at Christ's College, Cambridge, on June 16. On Monday, June 10, Dr. Pettersson delivered a lecture at the Royal Geographical Society on some features of the hydrographical work done in connection with the international cooperation, and Tuesday and Wednesday were occupied by meetings of various committees of the council.

The first meeting of the science group of the Franco-British Exhibition, to take place next year, was held on Tuesday. The following were present:—Sir Norman Lockyer, K.C.B., F.R.S., in the chair, Major Baden-Powell, Sir John A. Cockburn, Captain Creak, C.B., F.R.S., Sir David Gill, K.C.B., F.R.S., Colonel Hellard, R.E., Sir Thomas Holdich, Dr. H. R. Mill, Prof. Perry, F.R.S., Mr. F. W. Rudler, Dr. W. N. Shaw, F.R.S., and Dr. T. E. Thorpe, F.R.S. The question of classification was considered under the headings of historical apparatus, instruments of observation, and methods used in exploration of the land, the sea, the air, and the heavens. Special committees were appointed to deal with these subjects.

At the fifth annual general meeting of the British Academy, held on June 11, Lord Reay presiding, Dr. Henry Bradley, Mr. H. A. L. Fisher, Dr. J. P. Postgate, and Prof. J. Cook Wilson were elected fellows of the academy. The corresponding fellows also elected were:—M. Émile Boutroux (Paris), M. Leopold Delisle (Paris), Prof. B. L. Gildersleeve (Baltimore), Prof. Adolph Harnack (Berlin), Prof. Höffding (Copenhagen), Mr. Justice Holmes (U.S.A.), Prof. William James (Harvard), Prof. Frederick de Martens (St. Petersburg), Prof. Karl Eduard Sachau (Berlin), and Prof. Ulrich von Wilamowitz-Möllendorff (Berlin). In a valedictory address the president, Lord Reay, announced that an anonymous donor had presented to the academy the sum of 10,000*l.*, to endow a fund to be called "The Leopold Schwach Fund" for the furtherance of research in the archæology, art, history, languages, and literature of ancient civilisation, with reference to Biblical study. Lord Reay remarked that this first benefaction was of good augury, for although they might well claim aid from public funds, and maintain that the State should give encouragement to scientific studies promoted by the academy, he would repeat what he said in his first address, viz. that the academy may also stimulate private benefactors, on whose munificence we depend to a large extent in this country for the advancement of scientific knowledge. The British Academy is probably the only academy which is not State endowed, and has not even a domicile, but Lord Reay expressed the conviction that ere long it will be recognised at home as it has been recognised by the sister academies, which have assigned to the British Academy a place of distinction. Sir E. Maunde Thompson was elected president in succession to Lord Reay.

The adjudicators of the Hanbury medal have decided to award the Hanbury gold medal this year to Mr. David Hooper, curator of the economic and art sections of the Indian Museum at Calcutta. The medal is awarded biennially for high excellence in the prosecution or promotion of original research in the chemistry and natural history of drugs. Mr. Hooper, as recipient of the medal, will also receive the sum of 50*l.*, presented in the name of the late Sir Thomas Hanbury, as an expression of his desire to be associated with the memorial to his brother. He is the author of numerous papers dealing with vegetable materia medica, his latest contribution to scientific literature dealing with the anti-opium plant, and was associated with Brigade-Surgeon Dymock (a former medallist) in the compilation of "Pharmacographia Indica."

In connection with the celebrations of the bicentenary of Linnæus, described in another part of the present issue, the trustees of the British Museum have had specially printed in honour of the occasion "A Catalogue of the Works of Linnæus (and publications more immediately relating thereto) preserved in the Libraries of the British Museum (Bloomsbury) and the British Museum (Natural History) (South Kensington)." Copies of the catalogue were sent to accompany the addresses presented by Dr. Bather on behalf of the trustees of the British Museum to the Royal University of Uppsala and the Royal Swedish Academy of Sciences at Stockholm. The catalogue was prepared by Mr. B. B. Woodward, the assistant in charge of the general library at the Natural History Museum, with the collaboration of the general catalogue consultative committee as regards the books at South Kensington, and of Mr. W. R. Wilson, of the printed book department, as regards the books at Bloomsbury.

The annual meeting of the Association for Maintaining the American Women's Table at the Zoological Station at Naples and for Promoting Scientific Research by Women was held on April 20 at Mount Holyoke College. Miss S. E. Doyle, of Providence, was elected president, Mrs. E. L. Clarke treasurer, and Mrs. A. W. Mead secretary. The table of the association at the Zoological Station at Naples has been occupied at different times during the past year by Miss G. Watkinson, Miss F. Peebles, and Miss A. G. Newell. It has been assigned for the spring of 1908 to Miss M. J. Hogue. Nine theses (three of them were sent from foreign countries) were received in competition for the 1000-dollar prize offered for this year. The theses showed wider range of endeavour than those received in the two previous contests, as they dealt with botanical, anatomical, morphological, physiological, and chemical problems. Several were of decided merit, but since, in the opinion of the examiners, no one was of adequate merit to deserve the award, the association decided to exercise its right to withhold the prize. The fourth prize is announced for 1909.

The Herbert Spencer lecture, on "Probability, the Foundation of Eugenics," delivered at Oxford on June 5 by Mr. Francis Galton, has been published by the Clarendon Press. The author gives a short sketch of the history of eugenics, *i.e.* the "study of agencies under social control that may improve or impair the racial qualities of future generations, either physically or mentally," from his introduction of the word in 1883 to the organisation of the Eugenics Record Office in connection with the University of London. Passing to the application of probability to the theory of eugenics, Mr. Galton gives an interesting outline of a suggested short course of object-lessons in the methods of biometry, the meaning of averages, measures of variability, and so on being explained by reference to actual objects, such as hazel nuts or acorns arrayed like beads on a string. To most people variability implies something indefinite and capricious, and they require to be taught that it can be defined and measured. Mr. Galton then proceeds to point out that human action is guided less by certainty and by probability than by custom, prejudice, or other unreasonable influences; social opinion is the tyrant by the praise or blame of which the principles of eugenics may be expected to influence individual conduct, and public opinion may easily be directed into different channels by opportune pressure. Whenever public opinion is roused it will lead to action, and it is reasonable to expect that it will be strongly exerted in favour of eugenics when a sufficiency of evidence has been collected to make the truths on which it rests plain to all.

A LARGE meeting of people interested in the work and objects of the National League for Physical Education and Improvement was held at Devonshire House on Tuesday. The Duke of Devonshire, in the course of an address to the assembly, described the investigations made by the Physical Deterioration Committee, which collected a great deal of information of the highest importance, and made a number of suggestions of practical importance, especially in the direction of suggesting the steps which should be taken for the purpose of obtaining more accurate information as to the physical condition of the large masses of the people than are at present available. These steps are the indispensable preliminary to any effective action, either by Parliament, or by local authorities, or by the public, towards finding the remedy. One or two of the committee's recommendations relating to the medical inspection of schools and other educational subjects found a place in the Education Bill of last Session, and it is hoped that they will again find a place in an uncontroversial Bill which may be introduced in the course of the present Session. One of the objects of the league is to stimulate that public interest in the matter which seems to have been lacking, and a further object is to assist in organising local effort where it already exists, and where some beginning has been made in the direction of improvement. The meeting was also addressed by Lord Balfour, Prof. Howard Marsh, Sir Gilbert Parker, M.P., and the Bishop of Ripon.

ACCORDING to the *Daily Chronicle*, Giant's Quoit, Veryan, which figures prominently in the legendary and historical records of Cornwall, was reported on June 6, at the meeting of Truro Rural District Council, to have been destroyed by blasting and used for road metalling. The Quoit was delicately poised on a cairn, or beacon of hard rock, and with Giant's Cradle close by was of great archæological interest. A few years ago an effort was made to persuade the Government to appoint an inspector with expert knowledge whose duty it would have been to compile a record of remains of archæological interest and to take steps for their preservation. The frequency of acts of vandalism, such as that in Cornwall last week, shows the need for the appointment of an inspector with archæological knowledge to supervise these national memorials and educate local authorities as to their value.

AN excellent example of the mirage was observed on May 25 seaward of Llanelly, Carmarthenshire, by Mr. John Innes, about 3, 4, and 5 p.m. The tide was about full, the day hot, and an inverted image of the land hung in the clouds.

AN auroral display was seen at Pontyates, Carmarthenshire, from 10 p.m. to 11 p.m. on June 6 by the Rev. T. Thomas. He states that the effect on houses and hedges was very weird, and closely resembled the dawn of day; there were no streamers. The phenomenon was also noted at Llanishen, near Cardiff.

THE Brighton and Hove Natural History and Philosophical Society has for fifty years had Alderman C. Clark as its honorary secretary. So long a service in a position of this kind, involving much work and expenditure of time, is very remarkable. In recognition of the active part Alderman Clark has taken in bringing the society to its present prosperous condition, a massive silver salver and an illuminated album, containing the names of many past and present members was presented to him at the fifty-third annual general meeting on June 6.

THE statement as to the black tern breeding in Norfolk made in our issue of May 30 is, unfortunately, based on a mistake. It is the black-headed gull—a species still breeding in many parts of the British Isles—that has returned to its old nesting-haunts at Wells.

THE *Museums Journal* for May records the foundation at the Norwich Castle Museum of a section devoted to the study of economic biology, having for its title the Norwich Museum Association. It is desired to make this excellent museum the centre of the scientific life of the county, and to utilise its collections as a basis of instruction in subjects of importance to agriculturists, horticulturists, teachers, students, &c. A few models of insects injurious to agriculturists and horticulturists have already been installed in the central hall of the castle.

As year by year the account of the sugar-cane experiments conducted under the superintendence of Dr. F. Watts in the Leeward Islands is published, it is interesting to observe which of the seedling canes maintain their reputation, and to note the new seedlings that come into prominence. The season 1905–6, referred to in the recent publication issued by the Imperial Department of Agriculture for the West Indies was, like the previous one, characterised by drought, so that the failure in certain cases is attributed to this cause. A strong yellow cane introduced from British Guiana, known as D 625, gave the highest output, probably owing to the dry conditions surpassing such well-known varieties as B 208 and B 156.

A SERIES of analyses of the principal Indian oil seeds made by Dr. J. W. Leather form vol. i., No. 2, of the chemical series of Memoirs of the Department of Agriculture in India. The results, showing an average oil-content varying from 27 per cent. in safflower to 63 per cent. in castor seed, are of primary value to the grower and crusher. The author raises the question as to the deterioration of seed when transferred from one locality to another; thus linseed obtained from various parts of India and grown at Lyallpur in the Punjab gave a reduced proportion of oil. Other reasons may, of course, be advanced for such a reduction, but this explanation is based on the assumption that the yield becomes larger when the plants are acclimatised.

A NEW publication has been launched by the publisher of the *Rivista Geografica Italiana* as a supplement to that journal under the title of *Memorie Geografiche*. The intention is to supply a medium for the publication of monographs or original communications on the subjects of physical geography or terrestrial morphology. Italian geography will receive the preference, but contributions relative to foreign countries will be included. Each number will contain a complete memoir, and a special feature will be made of supplying illustrations and maps. The first number contains a study of the limits of altitude on the slopes of the Comelico Range, by Prof. O. Marinelli. The limits are reckoned for the snow-line, glaciers, shrubs, trees, pastures, barns, &c.

In the report for 1905–6 of the department of botanical research connected with the desert botanical laboratory at Tucson, Arizona, the director, Dr. D. T. MacDougal, refers to a number of problems that are being investigated by the resident staff or with the cooperation of other botanists. In order to test the influence of altitude and climatic factors upon vegetation small plantations are being laid out at different localities in Arizona and north and south California, where the same plants will be grown and the various modifications noted. Water storage in plants is being studied from several aspects, and some results are already noted. Storage organs are found most abundantly in regions where a scanty rainfall is confined to a short period and during the remainder of the year the precipitation is very slight. A curious storage organ at the base of the cucurbitaceous plant *Ibervillea sonorae* was examined by Dr. MacDougal. Changes in the shape and volume of the "saguara" *Cereus giganteus* were found by Mr. E. S. Spalding to depend mainly on water-content, but partially on temperature and illumination. The development of storage organs on the roots of seedling Opuntias was discovered by Dr. W. A. Cannon.

Two papers by Mr. R. N. Hall, on the prehistoric gold mines of Rhodesia, have been reprinted from the *African Monthly*, and issued by the African Book Company, Grahamstown. In this pamphlet, of forty-five pages, Mr. Hall collects a series of statements to prove that the main working of the Rhodesian gold mines was not due to the Portuguese during the sixteenth to eighteenth centuries, nor to the Arabs and Persians between the tenth and sixteenth centuries. He therefore holds that the mines must have been worked earlier than the tenth century. He maintains that the fragments of Nankin china found in the ruins do not prove that the Zimbabwe was erected in mediæval times, as the specimens were not found under the walls of the temple, and were buried during a subsequent occupation. He emphatically re-states the conclusion that the old mining and ruined temples of Rhodesia date from ancient times, and were due to Semitic immigrants.

The enormous rainfall of 9¼ inches in about half an hour during a thunderstorm at Guinea, Caroline County, Va., on August 24, 1906, is reported in the *Monthly Weather Review* of September last. Mr. E. A. Evans, section director of the Weather Service at Richmond, states that, being much interested in establishing the facts relating to this cloud-burst, he visited Guinea and obtained the following information. There were three "measurements" made in buckets of various dimensions, all in open positions, but the term "measurements" applies only indirectly, as there were no actual measurements taken at the time; the buckets, however, were said to have been full and overflowing. As the storm approached, the lightning became severe, and at the meeting of two clouds, one moving from west and the other from north-east, the rain "poured down in solid sheets." The storm came from the west, and moved almost due northward; the wind was light, and no rain of consequence fell 1½ miles east of Guinea.

Weather in war time was the subject selected by Mr. R. Bentley as his presidential address to Royal Meteorological Society on January 16. To find a new theme after fifty-six previous addresses is of itself not easy; Mr. Bentley's task was laborious, but he showed in a most interesting manner how the operations of war, both on land and sea, were influenced by weather in more than 360 cases, dating from the earliest times. We can only quote a few of the memorable instances. Rain appears to have been the leading factor on land; in A.D. 9 the Roman legions under Quintilius Varus perished in the swamps of Lippe, in Westphalia, owing to the impossibility of moving the wagons; 1870 years later the British experienced disaster from the same cause at Isandlwana, at the hands of the Zulus. On August 13, 1870, Marshal Bazaine excused his inactivity from his inability to cross the Moselle rapidly owing to the flooding of the river after heavy rain. Snow has also played a great part; the author refers to the passage of the Alps by Hannibal, and to the retreat of the French Army from Russia in 1812, among many other instances. Ice has been frequently of assistance; perhaps the most important occasion was the invasion of Denmark in 1658, when Charles X. marched his entire army over the frozen Baltic to besiege Copenhagen. The first exemplification of the result of fog was at the battle of Barnet, on April 14, 1471, when each side outflanked the other without being aware of it; it was owing to fog that Gustavus Adolphus lost his life at Lutzen in 1632. The effect of wind at sea may be exemplified by the buffeting of the various Spanish armadas between 1588 and 1719. In November, 1854, the allied fleets were seriously damaged by the Black Sea storm. This event was one of the principal causes that led to the establishment of storm signals in this country, as a study of the storm showed that if the present system of weather telegraphy had then existed, timely notice of its approach might have been given.

We have received copies of the *plan de voyage* and programme of scientific work of the proposed second Belgian Antarctic Expedition, drawn up by M. Henryk Arctowski. It is proposed to reach the edge of the ice-pack early in the season in about long. 100° W., and to spend some months in making hydrographic and magnetic observations. At a suitable opportunity efforts will be concentrated on making a way through the pack to the Antarctic coast, trusting to the prevailing easterly winds to bring the expedition to the neighbourhood of King Edward VII. Land, where the vessel may be able to put itself *à quai* on the edge of the ice-barrier and to go into winter quarters. Efforts will be made during the following spring to penetrate southward across the ice by means of automobiles. It is intended that the expedition shall be fitted out for three summers and two winters. The scientific programme was discussed at a meeting of men of science held at Brussels on May 4, and on May 12 an enthusiastic meeting was held at Antwerp under the presidency of M. Beernaert, Minister of State, to discuss ways and means.

The Home Office has issued the first part of the general report on mines and quarries for 1906 (Cd. 3478, price 7*d*.). The report contains statistics of the persons employed, output, and accidents at mines and quarries in the United Kingdom. The total number of persons employed was 912,576. The total output of coal was 251,067,628 tons, which is an increase of 14,938,692 tons on that of 1905. The death-rate from accidents per 1000 persons employed was 1·29 at collieries, 1·19 at metalliferous mines, and 1·06 at quarries, the corresponding rates for 1905 being 1·35, 1·45, and 1·04 respectively.

In the *Annals of Mathematics* for April Prof. G. A. Miller contributes a note on the use of group theory in elementary trigonometry. He deals with the various groups of angles the sum or difference of which is a multiple of

15°, 30°, 45°, and its interest would appear to lie, not so much in the use of groups for teaching trigonometry, but rather in the possibilities of using trigonometry for illustrating the elementary study of groups.

IN a paper on the chemical actions of light, M. P. Villard describes in the *Journal de Physique* (vi., May) certain continuation phenomena. An interesting experiment is illustrated showing the effect of green light on photographic papers containing tartaric acid. A sheet of such paper was under-exposed under a stereoscopic negative; one part was then submitted to green and another to violet light. On the green part an excellent image developed, while the violet rays completely fogged the other part. The use of green glass in intensifying prints thus finds a ready explanation.

IN the Journal of the Asiatic Society of Bengal (1907, vol. iii., No. 2) Prof. P. C. Rây describes the preparation of a silver mercuroso-mercuric nitrate by the action of a solution of mercurous nitrite on silver nitrite. The compound formed has the composition $Hg''(Hg',Ag)_2(NO_3)_2$, and is of interest as showing that univalent mercury has the power isomorphously to replace silver. In an article on the "Pursuit of Chemistry in Ancient India," published in the *Modern Review* of Allahabad, Prof. Rây shows, by reference to old Sanskrit writings, the antiquity of the knowledge of chemistry in this country, particularly as regards metallurgical processes and the preparation of medicaments. The existence of an enormous wrought-iron pillar at Katub, near Delhi, which dates back to about A.D. 400, and is larger than any forged in Europe until quite recently, is a striking illustration of the high state of development of the arts in ancient India prior to their decay caused by the introduction of a new caste system under the later religious teachers.

THE uncertainty which still exists regarding the latent heat of fusion of ice forms the subject of a paper by Mr. L. F. Guttmann in No. 4 of the *Journal of Physical Chemistry*. The values obtained by Regnault (79·2) and by Bunsen (80·0) for this fundamental constant differ by more than 1 per cent., and it is contended that Bunsen's result is vitiated by the fact that the value obtained for the density of solid ice at 0° is very variable and uncertain, depending, apparently, on the age of the ice. The value 75·59, re-calculated from Regnault's determinations by introducing certain corrections for the specific heat of ice and water, is considered to represent most accurately the true value for the latent heat of fusion of ice. It would appear, however, that Mr. Guttmann, while referring to the recent work of M. Leduc on the same subject published in the *Comptes rendus* (1906, vol. cxlii., p. 46), has overlooked the more detailed account given by the same author of his investigations in the *Journal de Physique* (see NATURE, vol. lxxiv., p. 41). The difficulties raised by Mr. Guttmann were there dealt with, and, after introducing all necessary corrections, a value of 79·2 was deduced for the latent heat as being in harmony, not only with Regnault's determinations, but also with the corrected values calculated from Bunsen's data.

MESSRS. C. E. MÜLLER, ORME AND CO. have sent us their flow extraction cup apparatus. This apparatus is an improved form of the Soxhlet extractor. Two forms of cup are used; in one case the cup has a siphon, so that the substance which is being extracted is kept covered by the solvent, and a continuous flow of the pure hot solvent is kept running directly through the substance. The other cup, which has a perforated bottom, is placed in an outer cup, which is so arranged that the inner cup stands about 1 cm. above it. By this means the cup is kept continuously surrounded by the hot solvent. We have tested this apparatus, and find the extraction to be both rapid and efficient. The cups are of glass, and are therefore very convenient for weighing the substance both before and after extraction. There is also an arrangement for distilling off the solvent after the extraction is completed.

THE 1907 issue of "The Statesman's Year-book" provides, in the convenient form one has learnt to expect in this invaluable anuual, the latest available statistics concerning the States of the world. In some cases the information comes up to within a few weeks of publication. One of the most important of the new features of the volume is the section, which has been entirely re-written, relating to the armies of the various States. Diagrams and tables are included exhibiting the comparative growth of the leading navies in the past with a forecast of the future. Maps are also given showing the Anglo-French Nigerian boundary, the Turko-Egyptian boundary (1906), the new boundary of Aden protectorate, and the increase in value of land and property in Great Britain. This is the forty-fourth publication of the annual, and Dr. J. Scott Keltie, its editor, is to be congratulated on maintaining its high standard of accuracy and usefulness.

A BIOGRAPHICAL sketch of the life and writings of Linnæus, by D. H. Harms, appeared in the *Naturwissenschaftliche Wochenschrift* of May 19.

OUR ASTRONOMICAL COLUMN.

COMET 1907*c* (GIACOBINI).—Circular No. 97 (June 6) from the Kiel Centralstelle gives a set of elements and an ephemeris for the faint comet discovered by M. Giacobini on June 1. From the ephemeris it is seen that the comet is travelling eastwards through Leo, and will pass about 1½ degrees north of δ Leonis on June 14; its brightness is decreasing slowly.

MARS.—In Bulletin No. 26 of the Lowell Observatory Prof. Lowell gives the results of the observations of the south polar cap of Mars made during the favourable presentation of 1905.

Owing to the adverse tip of the planet's axis and the distance of Mars from the earth at the suitable season of the Martian year, the mapping of the southern cap has not previously been attempted. The present communication gives the latitudes of the edge of the snow in successive longitudes as determined from some two hundred drawings. The extent of the snow cap as seen during the presentations from May 10 to August 14 is shown on three diagrams.

The observations indicate that during the beginning of the opposition cloud or mist enveloped the cap, for not until May 15 was the edge of the cap continuously recognised, although snow was seen, in latitude 31°·8 S., on January 25.

In a telegram, published in Circular No. 97 from the Kiel Centralstelle, Prof. Lowell announces that Mr. Lampland has photographed the Martian canals Thoth and Astaboras.

A THIRD ASTEROID NEAR JUPITER'S ORBIT.—From a determination of the orbital elements of the minor planet 1906 VY, Herrn Vladimir Heinrich finds that in this object we have a third member of the Jupiter group of asteroids. According to the elements yet determined, the length of the semi-major axis of the orbit is about 5·19 astronomical units (*Astronomische Nachrichten*, No. 4181, p. 88, June 1).

RADIAL VELOCITIES OF ε AND ζ CYGNI.—Observations made at Bonn during 1904–5–6 indicate that the period of the radial velocity of ε Cygni is possibly shorter than that exhibited by the Lick observations of this star. Prof. Küstner finds a variation, of the radial velocity in regard